HMA Construction Program

Surface Preparation

Learning Objectives

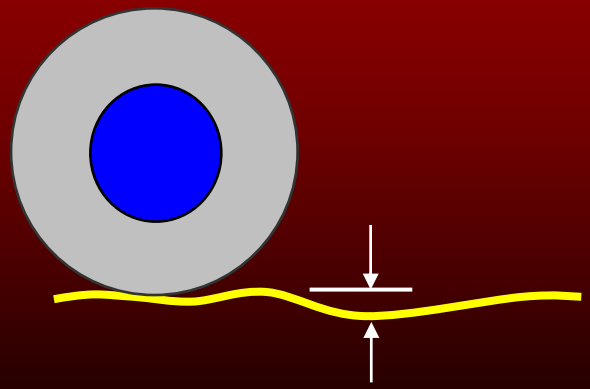
1. Describe proper techniques for preparing subsurface layers for new pavement
2. Describe proper techniques for HMA surface preparation (prior to overlay)
3. Describe proper *materials and construction* (M&C) techniques for patching
4. Describe proper techniques for placing leveling courses
5. Describe proper surface milling techniques

What do we have to improve to achieve the primary objective?

1. _____
2. _____
3. _____
4. _____

Pavement Smoothness

- Important because of its effect on:
  - Ride quality
  - Pavement deterioration
- Construction requirement (specification)
- Value depends upon cumulative profile variations



Preparation of the Subsurface Layers for a New Pavement

What materials and construction factors do we strive to control?

Is this subgrade ready?

Proof Rolling

Re-Work Weak Areas

To Prime?

OR

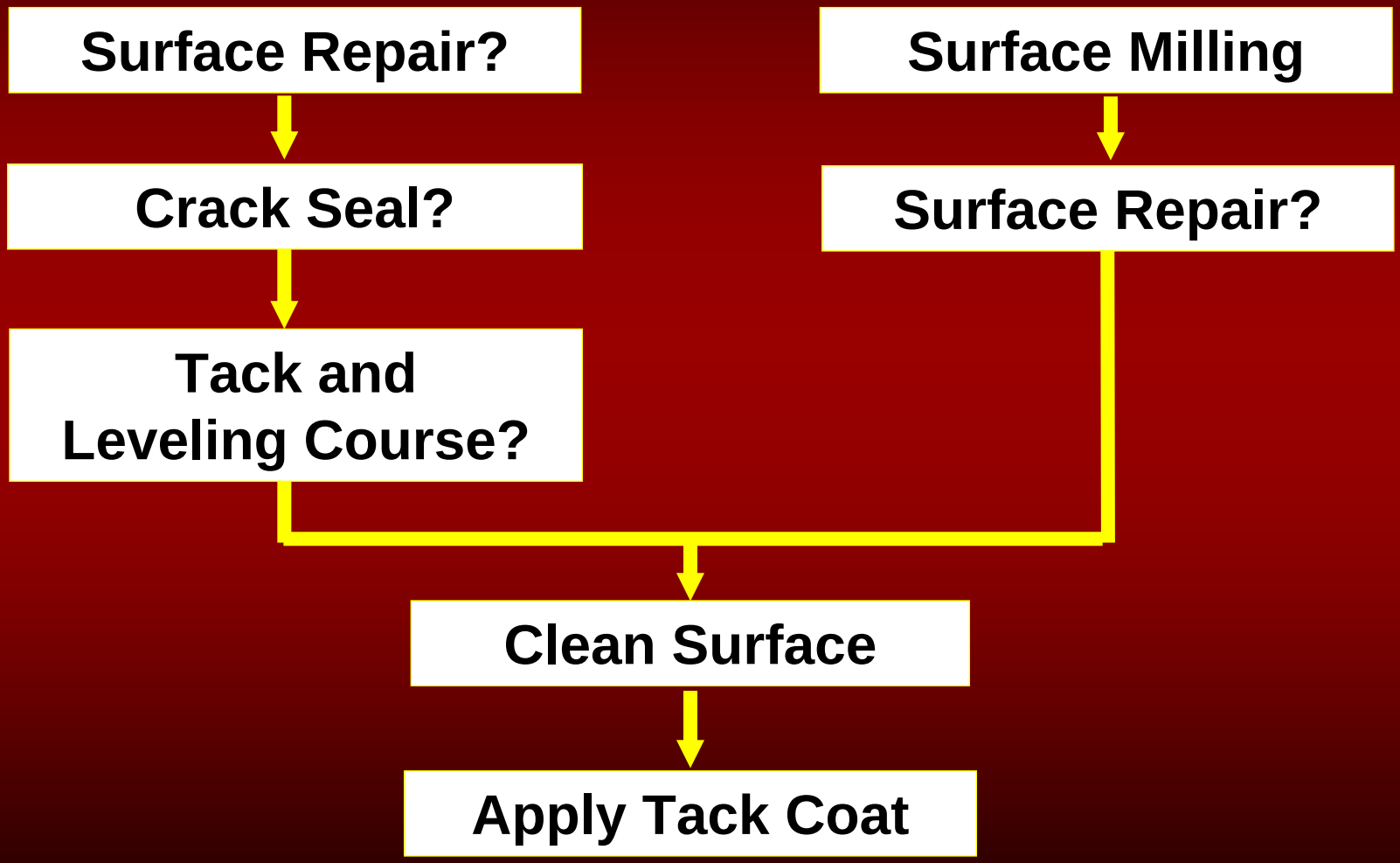
Not to Prime?

Preparation of an Existing Pavement Surface

Good Condition

Poor Condition

HMA Surface Preparation



Pavement Surface Repairs Must

- Address the distress mechanism (as well as symptom)
- Employ proper materials and construction procedures

Is this old patch okay?

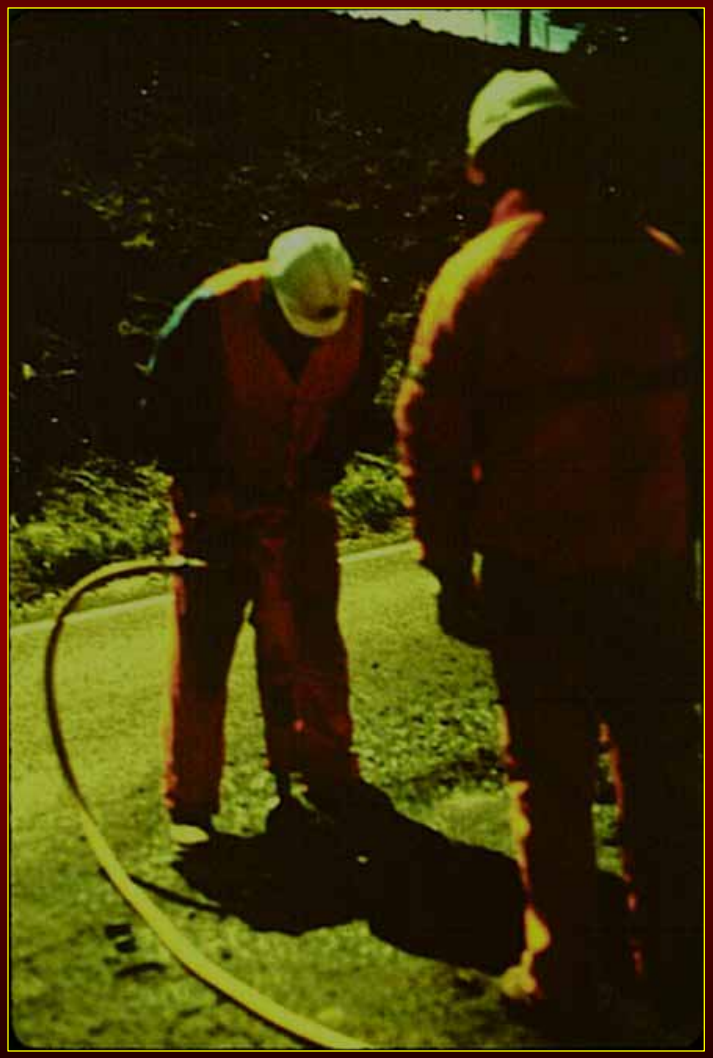
Patch Construction

1. Mark patch boundaries
2. Cut boundaries
3. Remove HMA and weak materials
4. Repair foundation
5. Apply tack coat
6. Place HMA patch material
7. Compact the patch

Mark Patch Boundaries

What's wrong with these?

Cut Boundaries



Small Patch

Medium to Large Patch

Remove HMA & Weak Materials

Back Hoe

Small Milling Machine

Address drainage problems

Repair Foundation
(Replace Base Material)

Repair Foundation
(Base Compaction)

Apply Tack Coat

Spray Application

Patch Area
After Tack

Place HMA Patch Material

Patch Compaction

Small
Patches

Medium to Large
Patches

HMA Patch Examples

Good

Poor

Crack Sealing

1. Purposes
2. Sealant materials
3. Stepwise process
   - Remove old sealant
   - Rout crack?
   - Clean (air blast or hot-air lance)
   - Apply sealant
4. Sealing vs. filling
5. Pros and cons

Good Candidate for Crack Sealing

Poor Candidates for Crack Sealing

Cracks Too
Narrow

Crack Severity
Too High

Typical Sealant Application

Potential Problem with Crack Sealing

Surface Cleaning

Apply Tack Coat

Typical Application

Does this look okay?

Tack Coat Examples

Proper
Coverage

Anything
wrong here?

Tack Coat Examples

Surface Leveling Course

Manually Placed Leveling Course

What caused these problems?

Surface Milling

Uses for Surface Milling

- Surface distress removal
- Achieve desired profile
- Maintain curb reveal
- Improve bond

Milling Equipment

Surface Preparation Review

- Define “surface”
  - Base/Subbase/Subgrade
  - Existing asphalt concrete
- Leveling
- Milling
- Clean and Tack

Questions???